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Serial No. 10/761,479

Docket No. 200309416-1

**REMARKS**

Claims 1-29 are currently pending in the subject application, and are presently under consideration. Claims 1, 2, 7, 8, 14, 19, 24, 26 and 29 stand rejected. Claims 3-6, 9-13, 15-18, 19-23, 25, 27 and 28 are objected to as being dependent from a rejected base claim, but would be allowable if rewritten in independent form. Claims 1, 9, 14, 19 and 24 have been amended. The amendments to claim 9 correct minor informalities and are not intended to further limit claim 9 in any manner. Favorable reconsideration of the application is requested in view of the amendments and comments herein.

**I. Rejection of Claims 1-29 Under 35 U.S.C. §101**

Claims 1-29 stand rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter.

Claim 1 has been amended to recite a value set selection system for optimizing a circuit design comprising a real cost function that generates a real cost for a first value set associated with a set of parameters, the first value set corresponding to a circuit configuration associated with the circuit design generated by a circuit analysis tool.

Claim 14 has been amended to recite a system for selecting a value set associated with a set of parameters of a circuit design, the system comprising a real cost function that determines a real cost for each of a plurality of real chromosomes that represent different value sets associated with a set of parameters, the plurality of value sets corresponding to different circuit configurations associated with the circuit design generated by a circuit analysis tool.

Claim 19 has been amended to recite a system for determining costs associated with a circuit design the system comprising means for generating real chromosomes representing different value sets associated with a set of parameters wherein the real chromosomes represent different circuit configurations associated with the circuit design.

Claim 24 has been amended to recite a method for selecting a value set associated with a set of parameters of a circuit design comprising, determining a real cost of a first value set associated with a set of parameters, the first value set corresponding to a circuit configuration

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associated with the circuit design generated by a circuit analysis tool. Amended claims 1, 14, 19 and 24 recite systems and a method having practical applications that provide a useful, tangible and concrete result. Accordingly, amended claims 1, 14, 19 and 24 meet the requirements set forth in 35 U.S.C. §101.

Claims 2-13, claims 15-18, claims 20-23 and claims 25-29 depend from amended claims 1, 14, 19 and 24, respectively, and recite patentable subject matter for at least the same reasons as amended claims 1, 14, 19 and 24. Accordingly, withdrawal of the rejection of claims 1-29 under 35 U.S.C. §101 is respectfully requested.

**II. Rejection of Claims 1, 2, 7, 8, 14, 19, 24, 26 and 29 Under 35 U.S.C. §102(a)**

Claims 1, 2, 7, 8, 14, 19, 24, 26 and 29 stand rejected under 35 U.S.C. §102(a) as being anticipated by "*Artificial Intelligence A Modern Approach*", 2003, by Russell, et al. ("Russell"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Amended claim 1 is not anticipated by Russell. Russell does not disclose a cost function approximator that determines an approximate cost based on a real cost and a value set variation between a second value set and a first value set, as recited in amended claim 1. In rejecting claim 1, the Examiner contends that an example of a heuristic estimate  $h(n)$  as disclosed in Russell, reads on the cost function approximator recited in amended claim 1 (See Office Action, Page 4). Applicant's representative respectfully disagrees. Russell discloses that  $h(n)$  is equal to an estimated cost of the cheapest path from node  $n$  to a goal node (See Russell, Page 95). In Russell,  $h(n)$  is based on the summation of the actual cost of moving among a plurality of nodes that lie between a first node and a goal node (See Russell, Page 95). In amended claim 1, the cost function estimator determines an approximate cost based on a real cost and a value set variation between a second value set and a first value set, and the second value set is a variation of the first value set. Russell does not disclose that  $h(n)$  is based on a value set variation. Instead, in Russell,  $h(n)$  is based on summation of actual costs. Accordingly, Russell does not disclose each and every element of amended claim 1. Therefore, amended claim 1 is not anticipated by Russell, and amended claim 1 should be patentable over the cited art.

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Claims 2 and 7 depend from claim 1 and are not anticipated for at least the same reasons as claim 1, and for the specific elements recited therein.

Amended claim 14 is not anticipated by Russell. Russell does not disclose an incremental cost function that determines speculative costs for a given speculative chromosome based on an incremental difference in value sets between at least one parent chromosome and an associated child chromosome and the cost associated with at least one of the parent chromosomes, as recited in amended claim 14. In rejecting claim 14, the Examiner contends that an example of  $h(n)$  reads on the incremental cost function recited in claim 14 (See Office Action, Page 5). Applicant's representative respectfully disagrees. The cited section of Russell discloses that  $h(n)$  is equal to a sum of costs based on two different features, namely  $x_1(n)$  and  $x_2(n)$ . (See Russell, Page 110). In the example disclosed in Russell, the two different features are the "number of misplaced tiles" and the "number of pairs adjacent tiles that are also adjacent in the state" (See Russell, Page 110). In amended claim 14, the incremental cost function determines speculative costs based incremental differences between at least one parent chromosome and an associated child chromosome and the cost associated with at least one of the parent chromosomes. Russell does not disclose that  $x_2(n)$  is a child chromosome of  $x_1(n)$  (or vice-versa). Instead, Russell discloses that  $x_1(n)$  and  $x_2(n)$  are cost functions of two different features. Accordingly, Russell does not disclose each and every element of amended claim 14. Therefore Russell does not anticipate amended claim 14, and amended claim 14 should be patentable over the cited art.

Amended claim 19 is not anticipated by Russell. Russell does not disclose means for determining a speculative cost based on a real cost and a difference in value sets of at least one generated real chromosomes and a speculative chromosome, as recited in amended claim 19. In rejecting claim 19, as with claim 14, the Examiner cites the example of  $h(n)$  disclosed in Russell that is based on a summation of costs based on two different features, namely  $x_1(n)$  and  $x_2(n)$  (See Office Action, Page 6). Applicant's representative respectfully disagrees with the Examiner's interpretation of Russell. In amended claim 19, the speculative chromosome represents value set variations from at least one of a generated chromosome. In Russell,  $x_1(n)$

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and  $x_2(n)$  are not value set variations, but rather cost functions for different features. Accordingly, Russell does not disclose each and every element of amended claim 19. Therefore, Russell does not anticipate claim 19, and claim 19 should be patentable over the cited art.

Amended claim 24 is not anticipated by Russell. Russell does not disclose approximating a speculative cost for a second value set based on a difference and a real cost, as recited in claim 24. In claim 24, the difference recited is the difference in at least one value of a first value set. In rejecting claim 24, as with claim 1, the Examiner cites the example of  $h(n)$  that is equal to an estimated cost of the cheapest path from node  $n$  to a goal node (See Office Action, Page 6, and Russell, Page 95). However, the speculative cost recited in amended claim 24 is based on a difference and a real cost. In contrast, as stated above with respect to claim 1, the  $h(n)$  disclosed in the cited section of Russell is based only on a sum of costs. Therefore, Russell does not disclose each and every element of amended claim 24. Accordingly, Russell does not anticipate amended claim 24, and amended claim 24 should be patentable over the cited art.

Regarding claim 26, claim 26 depends from claim 25, which was indicated as allowable if rewritten independent form including all of the limitations of the base claim and any intervening claim (See Office Action, Page 9). Accordingly, Applicant's representative respectfully submits that claim 26 is patentable for at least the same reasons as claim 25, and therefore, the rejection of claim 26 should be withdrawn.

Additionally, regarding claim 29, claim 29 depends from amended claim 24 is not anticipated for at least the same reasons as amended claim 29 and for the specific elements recited therein. Accordingly, claim 29 should be patentable over the cited art.

For the reasons described above, claims 1, 2, 7, 8, 14, 19, 24, 26 and 29 should be patentable over the cited art. Accordingly, withdrawal of this rejection is respectfully requested.

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**CONCLUSION**

In view of the foregoing remarks, Applicant's representative respectfully submits that the present application is in condition for allowance. Applicant's representative respectfully requests reconsideration of this application and that the application be passed to issue.

Should the Examiner have any questions concerning this paper, the Examiner is invited and encouraged to contact Applicant's undersigned attorney at (216) 621-2234, Ext. 104.

No additional fees should be due for this response. In the event any fees are due in connection with the filing of this document, the Commissioner is authorized to charge those fees to Deposit Account No. 08-2025.

Respectfully submitted,

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